

PSYCH VERB SUBJECTS AS EXPERIENCED EVENTS:  
CHILD LANGUAGE DATA

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1. Introduction

Psych verbs present several challenges to linguists, particularly with respect to linking and binding. Many accounts of psych verbs appeal to unaccusativity as an explanation for the puzzling behavior of the verbs. This paper uses data from child language to question the feasibility of such unaccusative analyses of psych verbs. I argue that child language data indicate that children begin to distinguish between subjects as representing physical events and subjects as representing experienced events. This is consistent with work on children's developing theories of mind.

2. Psych Verbs

2.1 The Verbs

The verbs of psychological state are verbs that are used primarily to describe states of mind or changes in states of mind (Levin 1993). These verbs include the words commonly used to express emotion, such as *admire, enjoy, favor, fear, hate, like, love, miss, trust, amuse, amaze, anger, annoy, astonish, concern, disgust, frighten, please, surprise, worry* among others (Levin 1993).

The verbs of psychological state are verbs with two arguments, typically called **experiencer** and **theme** (Belletti & Rizzi 1988; Grimshaw 1990) or **experiencer** and **stimulus**. They divide into two subgroups, each named after a representative class member. FEAR verbs link the experiencer argument to the subject position and the theme argument to the object position; FRIGHTEN verbs link the theme argument to the subject position and the experiencer argument to the object position. The examples in (1) illustrate this.

- (1)a. The boy fears the dog. (EXP-THEME)  
(1)b. The dog frightens the boy. (THEME-EXP)

FRIGHTEN verbs also differ from FEAR verbs in that the events they denote are causative events in which "the stimulus causes the experiencer to enter the mental state" (Croft 1993:56). Most of the FRIGHTEN causatives are able to denote events with either agentive or non-agentive subjects, as the examples in (2) and (3) illustrate.

- (2)a. The mask frightened the children.
- (2)b. The man frightened the children.
- (3)a. The book amused the children.
- (3)b. The librarian amused the children.

The concept of agency is important to linguistic analyses of psych verbs because only the non-agentive uses of FRIGHTEN verbs are known to exhibit unexpected behavior in the syntax, especially with respect to binding (Baker 1988b; Belletti & Rizzi 1988; Grimshaw 1990; Pesetsky 1987, 1992, and others).

## 2.2 The Linking Problem and the Binding Problem

There are two problems associated with psych verbs: the linking problem and the binding problem.

### 2.2.1. The Linking Problem

Psych verbs appear to exhibit irregular linking patterns. Linking refers to the way in which meaning is used to map arguments to the grammatical functions of a predicate. These linking regularities (Carter 1988) are generally predictable, even across languages. Hypotheses which capture this regularity of linking patterns in a number of universally applicable principles include Baker's (1988a) Uniformity of Theta Assignment Hypothesis (UTAH). Such hypotheses are attractive from a language theorist's viewpoint, as these generalizations have both explanatory and predictive value (Pinker 1989; Pesetsky 1992): they attempt to explain and predict the ways in which arguments bearing particular semantic roles tend to link to the same syntactic positions. Yet these theories do not appear to hold for psych verbs.

- (4)a. Mary likes turnips. (EXP-THEME)
- (4)b. Turnips please Mary. (THEME-EXP)
- (5)a. The man frightened the child. (AGENT-EXP)
- (5)b. The mask frightened the child. (THEME-EXP)

The pair of sentences (4) expresses the same or highly similar ideas, yet they link apparently identical arguments to different syntactic positions. The pair of sentences in (5) pose a problem for semantic-role based theories of linking in which roles are hierarchically related to one another. It is unusual from this perspective for the theme argument to map onto the subject position as it is lower on all thematic hierarchies than the experiencer argument. It is this problem in particular which this paper will address.

### 2.2.2. The Binding Problem

Binding Theory (Chomsky 1981) describes and predicts how referring expressions (nouns), pronominals, and anaphors relate to each other in sentences. Some acceptable uses of psych verbs appear to flout the principles of Binding Theory. FEAR verbs as

well as the agentive uses of FRIGHTEN verbs pattern in standard ways in the syntax, as the sentences in (6a) and (6b) illustrate; these sentences are not acceptable because they violate Principle A of Binding Theory, which requires the anaphor *each other* to be bound within its local domain. However, what Grimshaw (1990) calls the "non-agentive" uses of FRIGHTEN verbs, as in (6c) and (6d), seem to violate this principle.

- (6)a. \*Each other's siblings love the two friends.
- (6)b. \*Each other's parents deliberately frightened the children to teach them a lesson. (Baker 1988b)
- (6)c. Each other's health frightens the young lovers. (Baker 1988b)
- (6)d. Stories about herself generally please Mary. (Pesetsky 1987)

The crucial matter to be examined is this: Why does the difference in the nature of the subject NP (that is, an agentive entity as compared to a non-agentive entity) apparently result in this flouting of binding theory for the FRIGHTEN verbs?

### 3. Unaccusative Solutions

Belletti & Rizzi (1988), Grimshaw (1990), and others (e.g. Pesetsky 1995; Pustejovsky 1995) approach the problems associated with psych verbs somewhat differently from one another, yet they rely to a greater or lesser extent on the notion of unaccusativity to solve the problems associated with psych verbs. Unaccusative accounts of psych verbs such as Belletti & Rizzi (1988) argue that, despite the surface differences in the realizations of the arguments of FEAR and FRIGHTEN verbs, the underlying representations are similar to one another in that, for both types of verbs, experiencer arguments in the d-structure are structurally higher than theme arguments. The theme-subjects of non-agentive FRIGHTEN verbs are derived via a movement which leaves the experiencer argument in the object position. Unaccusative accounts such as Grimshaw (1990) see argument structure as the source of this unaccusativity. Where FEAR verbs and agentive FRIGHTEN verbs have the same kind of argument structure as typical transitive verbs, the non-agentive FRIGHTEN verbs have no external argument. The example in (7) summarizes the relevant aspects of both Grimshaw (1990) and Belletti & Rizzi (1988). Both accounts differentiate FRIGHTEN verbs with respect to agentivity. FRIGHTEN verbs with agentive subjects have normal argument structures and normal linking patterns. FRIGHTEN verbs with non-agentive subjects are essentially different from agentive FRIGHTEN verbs in that their subjects are derived from an underlying position which is lower than that of the direct object.

- (7)a. The man frightened the children.  
       AGENT                      EXPERIENCER  
       Argument structure: x (y)

- (7)b. The mask<sub>i</sub> frightened the children (t<sub>i</sub>).

THEME

EXPERIENCER

^

Argument structure: (y,x)

Unaccusative accounts of psych verbs, then, propose two entirely different verbs with the same phonological shape: agentive FRIGHTEN verbs and non-agentive FRIGHTEN verbs. Data from child language, however, raises questions for accounts such as these.

#### 4. Child Language Data

Given the behavior of psych verbs described above, acquisition data would be expected to reflect the child's efforts to acquire this unusual group of verbs. Yet the exceptional representations which are attributed to psych verbs--particularly unaccusativity--do not seem to be reflected in the rather unexceptional acquisition data for these verbs.

##### 4.1. Bowerman's Study

Bowerman (1990) uses data from her diary study of her two daughters to argue that psych verbs provide evidence concerning the learning of linking rules. She claims that her daughters made no errors in linking with these verbs until the ages of six and eight.

At that point, they began to switch patterns for low-frequency FEAR and FRIGHTEN verbs. For the most part, this involved using some FEAR verbs in the FRIGHTEN linking pattern. That is, they began to link the theme arguments of FEAR verbs to the subject position instead of the object position (1990:1284).

- (8) How does 'Hurly Girl' fancy you? (How do you fancy...) (Christy, age 9;0)
- (9) It didn't mind me very much. (I didn't mind it...) (Eva, age 6;2)
- (10) I saw a picture that enjoyed me. (that I enjoyed) (Eva, age 6;6)

The Bowerman data actually demonstrate that psych verbs were acquired quite unexceptionally by these children. There is, in fact, no evidence to indicate that FRIGHTEN verbs have two separate argument structures, or that the linking rules associating experiencers sometimes with objects, sometimes with subjects was problematic for these children. I argue this on several important points.

First, errors with psych verbs were rare for Bowerman's children; indeed, when they were young, the children made no errors with psych verbs. In the early data (Bowerman 1990) with both FEAR and FRIGHTEN verbs, particularly like and scare, there were no linking errors at all. This fact also indicates that there were no special errors attributed to early learning of the unaccusative structures which have been associated with psychological FRIGHTEN

verbs, such as failure to raise the d-structure object to s-structure subject position. Deprez & Pierce (1991) report that, very early in the acquisition process, errors with unaccusative verbs tend to surface. That is, as much as 90% of the children's subject-less utterances at this age involve unaccusative verbs (Pierce 1991). Bowerman reports none of these errors with psych verbs. This suggests that psych verbs are largely acquired quite unexceptionally along with regular transitive verbs. Had these errors been evident, there would be independent support for the unaccusative analyses of Grimshaw (1990) and Belletti & Rizzi (1988).

Secondly, the few errors that Bowerman did record occurred quite late and then largely with low-frequency verbs such as *fancy*; that is, the children did not generally make errors with more commonly occurring psych verbs such as *love* or *frighten*.

Thirdly, at least half of the errors reported by Bowerman (1990) occurred with intransitive verbs in combination with prepositional phrases, such as *approve of*, *react to*, and *appeal to*, and in (11). (from Bowerman 1990:1284).

- (11) I don't appeal to that! (That doesn't appeal to  
me) Christy, age 7;0

Because intransitive verbs generally signal non-causative meanings (Bowerman 1982), it makes perfect sense for the children to have used them within the more causative, transitive frame associated with FRIGHTEN verbs when the children wished to express a cause.

Further explanation of these errors may come from the work of Naigles, Fowler & Helm (1992) and Naigles, Gleitman & Gleitman (1992), who investigated the establishment of argument structure within children across various age groups. They argue that, where children are likely to change the meaning of a verb, to shift its argument structure, or to accept a new argument structure for the verb, adults are less likely to do so. Adults and older children maintain the meaning of a verb as well as its argument structure and tend to alter what they hear to match what they already know. The researchers distinguish these two tendencies as *Frame Compliance*, where children accept the data they hear and adjust their lexicons accordingly, and *Verb Compliance*, where older children and adults do not accept what they hear, and tend to change the data to fit what they already know about a verb. These researchers conclude that, in using Noun-Verb-Noun sentence patterns, children tended to be *Frame Compliant* until age nine. After that age, they tended to become *Verb Compliant*.

The conclusions of Naigles, Fowler & Helm (1992) may be applied to the Bowerman (1990) data. In constructing the novel utterances in (8-10), the Bowerman children were still at an age where they would be expected to experiment with meaning and with

argument structure at the cost of the syntactic pattern. Altering the argument structures of these psych verbs to fit what Bowerman calls a "statistically preponderant pattern" (1990:1285) or simply the accepted causative-transitive pattern is something that children might do while they are still Frame Compliant and not yet Verb Compliant. Given the exceptional representations attributed to these verbs by Belletti & Rizzi (1988), Grimshaw (1990) and Pesetsky (1995), and given the expectation that, under the age of nine, children easily alter linking patterns, linking errors with psych verbs would be expected. The remarkable thing about this error data with respect to current accounts of psych verbs is simply that there is not more of it.

#### 4.2. Tinker, Beckwith & Dougherty's Study

Tinker, Beckwith & Dougherty (1989) describe an experiment that two of the authors performed with nursery school children in which they elicited responses to questions using, among others, psych verbs. The authors had expected the children to demonstrate some confusion with FRIGHTEN verbs, as these verbs are said to be syntactically "marked" as an odd subgroup of verbs, whereas the FEAR verbs are perceived as being quite regular transitive verbs (p. 254). Results indicated, however, that the children could use FRIGHTEN verbs correctly in active as well as passive sentences. The authors conclude that both the agentive and non-agentive FRIGHTEN verbs are, in fact, quite easily learned.

In the Tinker, Beckwith & Dougherty analysis, it is because the FRIGHTEN verbs are causatives that children had no problem with them. They write, "the relevant feature...for children is the presence of an object affected by a cause in the situational context referred to by a sentence" (1989:259). The child classifies psych verbs as agent-theme verbs whose arguments are predictably linked to grammatical positions of subject and object. The authors point out that the significant factor for the child using these verbs is not their syntactic behavior, but their relational behavior. By this they mean the way in which the arguments participate in the event named by the verb.

Conspicuously absent from the Tinker, Beckwith & Dougherty (1989) study is data which might support an unaccusative account of psych verbs, such as that presented by Grimshaw (1990) and Belletti & Rizzi (1988). The children in the Tinker, Beckwith & Dougherty study did not make the errors which might be expected if linking for FRIGHTEN verbs were problematic. In fact, the writers themselves argue against the purportedly exceptional nature of psychological FRIGHTEN verbs with respect to linking. For the most part, errors with linking experiencer arguments were few.

#### 5. Mental Events and Causality

In this section, I describe the implications of the acquisition

data analysis for work in lexical semantics. The lexical semantic structures I suggest support the ideas of Beckwith (1989), Johnson (1982), and others concerning children's developing theories of mind.

Tinker, Beckwith & Dougherty (1989) hypothesize that, as a child learns English, the only way she can understand a FRIGHTEN verb is in its agentive sense. The relation between the agent and the experiencer (just as the relation between the agent and the patient) is one of causality: The agent causes the experiencer to experience a certain psychological state. They propose that when the child is older she understands that inanimate theme arguments used as subjects of these verbs can also be interpreted as causal, and she learns to link participants bearing either role (that is, the agent of agentive FRIGHTEN or the theme of the non-agentive FRIGHTEN) to the subject position. In this analysis then, the child learns to use agentive FRIGHTEN verbs first; learning to use non-agentive FRIGHTEN verbs involves assimilating the non-agentive theme-experiencer role frame to the agent-experiencer role frame. Children need to learn, in other words, that theme subjects can be a kind of abstract, non-active agent. Agents and themes are both causes of the event denoted by the verb. This process of assimilation is not unlike the child's developing sense of causality as well as the child's developing sense of the mind.

Bloom & Beckwith (1989) point out that mothers of young children do not often use emotion words when talking about emotional events. What these researchers found was that the mothers instead "talked about the situations that were the causes, consequences, and circumstances of their children's emotional expression" (1989:335). Bloom & Beckwith argue that, well before they learn the words to express causality, such as *because* and *why*, children are able to talk about "causal connections entailed in emotional experience" (p. 337). In fact, Bloom & Capatides (1987) argue that it is through talking about these emotional events that children begin to understand causality itself. As far as feelings are concerned, children often express feelings through the use of facial expressions and other types of body language (Bloom & Beckwith 1989). The ability to use language to express feelings evolves as the child grows (Beckwith 1992; Dunn, Bretherton & Munn, 1987; and Johnson, 1982).

Beckwith (1992) argues that children first learn to speak of emotions as concrete, physical phenomena. These phenomena may even be associated with specific body parts. Data collected from my own children support this:

- (12) Mom: Jeremy! What are you doing? (He has his baby sister in a strangle-hold.)  
Jeremy: Don't worry, Mommy. I'm just loving my sister (He squeezes harder.) March 91 age: 3;9  
(13) Samantha: (to her dolls) Now if you be good, I

will love you very good. And I won't give you any  
time-outs. October 92 age 2;1

Both children above are using the FEAR verb love in an activity sense. They are not experiencing difficulty with linking. The children are also associating the verb with concrete actions, not just emotional states. Only when children are older, Beckwith writes, do they "learn to locate emotions in their heads" (1992:84). He notes that emotions can be polysemous in referring to the emotions themselves or to the "eliciting conditions" of the emotions, that is, to the concrete action of the experiencer or to the experiencer as the affected object. The verb love in (12) refers to the action of the experiencer: for Jeremy, loving his sister refers to the act of squeezing as much as it does to whatever feeling may be within him.

What appears to be the child's developing ability to use psych verbs in increasingly abstract ways is consistent with the child's developing sense of the mind (Beckwith 1992). Johnson (1982) argues that the development of children's language about mental states may not be quite as smooth a progression from external events to internal events as Beckwith suggests, but it certainly develops as the child ages. Johnson also argues that even young children have a partial understanding of cognitive events and acts. His position is consistent with Gentner's (1978) in that he argues that mental verbs first refer to relations, and only later to actual mental entities. This is evident below, where Samantha's focus is on what Robbie did, not on how she perceived what he did.

- (14) Mom: (at a Halloween party) What's wrong, Samantha?  
Samantha: (crying) Robbie scared me. On purpose.  
Mom: What did he do?  
Samantha: He scared me, Mommy.  
Mom: Did his mask frighten you?  
Samantha: Yes. Robbie scared me on purpose.  
(Oct. 92, age 2;2)

The context behind this example is that Robbie, who was wearing a scary mask, simply turned to look at Samantha. Although her perception is that he intentionally did something to scare her, that is not what happened; she simply reacted to the mask. Yet her only way of articulating this incident is to claim that Robbie actually did something causal. She doesn't really rise to the bait when Mom asks, "Did his mask scare you?" She insists that the boy did something to scare her intentionally. As the next section of this paper will argue, the differences between the two types of subject arguments--the *mask* and *Robbie*--is an important one semantically as well as developmentally.

## 6. Subject Arguments as Experienced Events

### 6.1. Two Types of Subjects

Bouchard (1995) distinguishes between subjects as concepts and



subjects as Intentional-Subjects (I-Subjects), arguing that these different types of subjects are associated with different types of events, analogous to Pustejovsky's (1995) direct causation and experienced causation. Bouchard (1995) points out that psych constructions are extremely productive in many languages, and that regular verbs are used frequently in psychological ways. His often cited example is *strike*.

(15)a. The book struck Mary as interesting.

(15)b. The book struck Mary on the head.

Bouchard points out that there is an essential difference between the two subject participants: one is an entity, the other is simply an idea. In the different uses of FRIGHTEN verbs, the same sort of distinction applies.

(16)a. The boy (intentionally) frightened Samantha.

(16)b. The mask frightened Samantha.

In the first example, the subject acts as an Intentional-subject--an agent--to cause the reaction denoted by the verb. In the second example, the mask does nothing. In fact, it is not actually the mask which frightens Samantha at all, but it is her mental experience of the mask which frightens her; in this sentence, the subject is not an entity, but a concept. It becomes linked to the subject position because it is associated with causing the mental state, but it is simply the idea of the mask that frightens the child.

## 6.2. Two Types of Causatives

Bouchard's idea above is similar to that of Pustejovsky (1995) who argues that experiencer predicates always have an experiencing event in the subject position. He distinguishes between direct causation for regular causatives and experienced causation for psychological causatives. What this means is that in the lexical semantic representation of the causing event of psych verbs, there is at some level a representation of the experiencer's experience of the argument linked to the subject position.

In a very general way, causatives usually have one of the following logical structures.

(17) [DO (x)] CAUSE [BECOME (y <frightened>)]

(18) [DO (x,y)] CAUSE [BECOME (y <frightened>)]

The representation in (17) means that x is engaged in an activity that causes a second related event which is named by the verb in the primitive <frightened>. The representation in (18) is slightly different in that it seems to encode something like agency in which x acts upon y to cause the event named by the verb. Neither of these representations seem able to encode this idea of the subject as concept (Bouchard 1995) or the idea of experienced causation (Pustejovsky 1995), what I am generally calling the experienced

event. I suggest the following logical structure to describe this type of subject.

(19) [x<sub>e</sub>] CAUSE [BECOME (y <frightened>)]

This simply approximates the insight the x represents an experienced event, what is in Pustejovsky's (1995) formulation experienced causation, represented at some level in the following way.

(20) [EXPERIENCE (y,x)] CAUSE [BECOME (y <frightened>)]

I suggest--following the insights of Pustejovsky (1995) and Bouchard (1995)--that a representation such as (19) obviates the need for an account of psych verbs to appeal to the notion of unaccusativity. Such a representation can account for both the linking and the binding problems.

#### 7. Application to Problems

This notion of the experienced event as the subject argument can help account for the problems associated with psych verbs as well as explain the late-error data from Bowerman (1990) in examples (8)-(10).

Bowerman suggests that the girls are using FEAR verbs in the FRIGHTEN verb pattern simply because it is the predominant pattern in English. But I believe that there is something more to this data: the girls could be acquiring more sophisticated lexical semantic structures. These errors are exactly the sort which would be expected if the girls were, in fact, learning to link the experienced event to subject position. That is, these would be expected errors if the children were in the process of learning the difference between subjects as Intentional subjects and subjects as concepts. What they may be doing here is actually viewing the subject argument as the experienced event [EXPERIENCE (x,y)] as they would with a FRIGHTEN verb. This is, after all, the productive use of psychological verbs in English (e.g. *strike me as interesting*).

My suggestion that this data reflects the children acquiring the abstract sub-eventual structure of the EXPERIENCE constant is consistent with work on children's acquisition of causality with respect to emotions, as well as with work on children's developing the ability to perceive and use abstractions discussed in earlier sections.

The binding problem may also be viewed differently if the events represented by the subject arguments of psych verbs are either intentional events or experienced events. Binding theory applies when subjects of psych verbs are intentional subjects, that is, when they are agentive, as in (6a-b) above. Binding theory does not appear to hold for concept subjects of psych verbs, what

Pustejovsky (1995) calls experienced causation. But, in effect, binding does apply at a level of semantic representation such as that in (20): concept subjects require the representation of the experiencer in the event denoted by the subject argument. At such a level, the arguments and anaphors in (6c-d) may be said to be bound to one another (Pustejovsky 1995).

## 8. Conclusion

Exceptional lexical semantic representations typically attributed to psych verbs cannot be supported by the quite unexceptional ways in which children acquire these verbs. Children's acquisition of psych verbs seems to be consistent with the process of acquiring increasing levels of abstraction; I argue that there is evidence of this in child language data. This paper supports theories of lexical semantics which do not rely on accepted semantic role hierarchies, but instead on event-related properties of words.

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